

**CLAIMS**

1. A system comprising:

a frame formatter configured to format a transport stream  
to produce a block stream;

an error correction encoder configured to encode said  
5 block stream to produce an error protected block stream;

an interleave module configured to interleave said error  
protected block stream to produce a data stream;

a turbo encoder configured to encode said data stream to  
produce an encoded stream;

10 a bit-to-symbol mapper configured to map said encoded  
stream to produce a symbol stream capable of at least eight  
different symbols; and

a modulator configured to modulate said symbol stream.

2. The system according to claim 1, wherein said  
transport stream defines two high definition television programs  
substantially simultaneously.

3. The system according to claim 1, wherein said turbo  
encoder comprises:

a first systematic encoder configured to encode said data stream to produce a first redundant stream;

5 a bit interleave module configured to interleave said data stream to produce a second data stream; and

a second systematic encoder configured to encode said second data stream to produce a second redundant stream.

4. The system according to claim 3, wherein said turbo encoder further comprises:

a puncture module configured to puncture bits from said first redundant stream and said second redundant stream to produce a redundant portion of said encoded stream.

5. The system according to claim 1, further comprising:

a synchronization inserter configured to insert a synchronization signal into said data stream.

6. A method for transmitting comprising the steps of:

(A) formatting a transport stream to produce a block stream;

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(B) turbo encoding said block stream to produce an error  
5 protected block stream;

(C) interleaving said error protected block stream to  
produce a data stream;

(D) encoding said data stream to produce an encoded  
stream;

10 (E) mapping said encoded stream to produce a symbol  
stream capable of at least eight different symbols; and

(F) modulating said symbol stream.

7. The method according to claim 6, wherein said  
transport stream defines two high definition television programs  
substantially simultaneously.

8. The method according to claim 6, further comprising  
the steps of:

encoding said data stream to produce a first redundant  
stream;

5 interleaving said data stream to produce a second data  
stream; and

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encoding said second data stream to produce a second redundant stream.

9. The method according to claim 8, further comprising the step of:

puncturing bits from said first redundant stream and said second redundant stream to produce a redundant portion of said encoded stream.

10. The method according to claim 6, further comprising the step of:

inserting a synchronization signal into said data stream.

11. A system comprising:

a demodulator configured to demodulate a signal to produce a symbol stream capable of at least eight different symbols;

a converter configured to convert said symbol stream into an encoded stream;

a turbo decoder configured to decode said encoded stream to produce an data stream;

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10 a de-interleave module configured to arrange said data stream into an error protected block stream;

an error correction decoder configured to decode said error protected block stream into a block stream; and

a formatter configured to format said block stream into a transport stream.

12 The system according to claim 11, wherein said signal defines two high definition television programs substantially simultaneously.

13. The system of claim 11, wherein said turbo decoder comprises:

a plurality of decode modules configured to decode said encoded stream to produce said data stream.

14. The system according to claim 13, wherein said turbo decoder further comprises:

a de-puncture module configured to de-puncture a redundant portion of said encoded stream.

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15. The system according to claim 13, further comprising:

a synchronization remover configured to remove a synchronization signal from said data stream.

16. A method for receiving comprising the steps of:

(A) demodulating a signal to produce a symbol stream capable of at least eight different symbols;

(B) converting said symbol stream into an encoded stream;

(C) decoding said encoded stream to produce an data stream;

(D) arranging said data stream into an error protected block stream;

(E) decoding said error protected block stream into a block stream; and

(F) formatting said block stream into a transport stream.

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17. The method according to claim 16, wherein said transport stream defines two high definition television programs substantially simultaneously.

18. The method according to claim 16, further comprising the step of:

decoding said encoded stream to produce said data stream.

19. The method according to claim 18, further comprising the step of;

de-puncturing a redundant portion of said encoded stream.

20. The method according to claim 16, further comprising the step of:

removing a synchronization signal from said data stream.